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|-----------------|-------------|----------------------|---------------------|------------------|
| 09/987,010      | 11/13/2001  | Tetsuyoshi Inoue     | 204552021700        | 6384             |

7590 11/24/2004  
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| EXAMINER |
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NGUYEN, TUAN N

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| ART UNIT | PAPER NUMBER |
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2828

DATE MAILED: 11/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/987,010

**Applicant(s)**

INOUE ET AL.

**Examiner**

Tuan N Nguyen

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,5 and 6 is/are rejected.
- 7) ☐ Claim(s) 3,4 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                         |                                                                             |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                                |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____                                                             | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *General Status*

1. This is a Final Action on the Merits. Claims 1-6 are pending in the case. Claims 3, 4 are being objected to.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of 35 U.S.C. 102(e) which forms the basis for all obviousness rejections set forth in this Office action:

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. Claims 1, 5 are rejected under 35 U.S.C. 102(e) as being unpatentable over Kotato et al. (US 6099678).

Kotato et al. '678 shows in figures 1, 5, 7, 9-11 and discloses a manufacturing method for a semiconductor laser device in which semiconductor chip is mounted on a base portion by using an electrically conductive die-bond paste including metal filler such as silver (Col 1: 37, 65) (Col 2: 42), by applying die-bond paste onto the base, mounting the semiconductor onto the base portion, temporary curing the die-bond paste while the semiconductor chip is kept pressurized toward the base portion (Col 2: 60-67) (Col 3: 1-12), and finally curing the conductive die-bond paste (Col 4: 6-19) (Col 6: 27-67) (Col 7: 1-10).

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

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such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or non-obviousness.
5. Claim 2, 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kotato et al. (US 6099678) in view of Inaba (US 6255742).

With respect to claims 2, 6 Kotato '678 discloses the above and further discloses the temperature use in curing of the bond and semiconductor (Tables 1, 5, 6), the claims 2 and 6 further discloses the thermal resistance of semiconductor laser device is 90 °C/W or lower and the content ration of silver in die-bond paste is 82%-84%. Inaba '742 shows in (Fig 9a-d: 1,2,19; Fig 11b:20, 7) a semiconductor laser device having semiconductor laser chip mounted on a based portion using electrically conductive die-bond paste (Col 8: 62-67), where thermal resistance of semiconductor device is about 30 °C/W (Col 7: TABLE 1). Also, Inaba '742 discloses the amount of die-bond surface of semiconductor laser chip (Col 8: 62-67; Col 0-60). It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

### **Allowable Subject Matter**

6. Claims 3, 4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, since the prior art of record and considered pertinent to the applicant's disclosure does not teach or suggest the claimed *wherein creep-up height of the conductive die-bond paste at a side face of the semiconductor laser chip from a die-bond surface of the semiconductor laser chip is not more than 40um; or wherein the conductive die-bond paste interposed between a die-bond surface of the semiconductor laser chip and the base portion is 5um or lower.*

### **Response to Argument**

7. Applicant's arguments filed on 09/20/2004 have been fully considered but they are not persuasive.

The Kotato et al. '678 reference does shows in figures 1, 5, 7, 9-11 and discloses a manufacturing method for a semiconductor laser device in which semiconductor chip is mounted on a base portion by using an electrically conductive die-bond paste including metal filler such as silver (Col 1: 37, 65) (Col 2: 42), by applying die-bond paste onto the base, mounting the semiconductor onto the base portion, temporary curing the die-bond paste while the semiconductor chip is kept pressurized toward the base portion (Col 2: 60-67) (Col 3: 1-12), and finally curing the conductive die-bond paste without pressuring (Col 4: 6-19) (Col 6: 27-67) (Col 7: 1-10) (Fig 1, 5, 7, 8, 9, 11).

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The applicant pointing out that the claim 1 does not disclose “the semiconductor laser chip is kept pressurized by a collet bearing a weight toward the base portion,” and “finally curing the conductive die-bond paste in a thermostat without pressurizing by the collet”. However, the applicant pointing out that Kotato discloses a film suction holding a film shape or a chip (ABSTRACT) bonded to a lead frame or base portion. Furthermore, (Col 3: line 10-40) did disclose a feeder or collect use to pressurized the semiconductor chip toward the based portion, acting together. In addition, (Col 5: line 10-20) discloses that the element is heat in the traveling table in the final curing state.

### ***Conclusion***

8. The prior art made of record and relied upon is considered pertinent to applicant's discloses.

Reeder et al. (US 6426552) discloses a method for securing semiconductor components using die-bond paste, heating while pressurized the chip to the base, while temporary curing with out pressuring (Fig 1: 11-16, 17-17', 19').

9. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP 706.07. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Communication Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan N Nguyen whose telephone number is (571) 272-1948. The examiner can normally be reached on M-F: 7:30 - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harvey Minsun can be reached on (703) 308-16741. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tuan N. Nguyen

